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SPACE GATEWAY SUPPORT (SGS) **SGS-12 51 00.00 99 (November 2006)**

Preparing Activity: SGS-DE **Superseding**
SGS 12 51 00.00 99 (April 2006)
SGS-11670J (February 2005)

SGS GUIDE SPECIFICATIONS

References are NOT in Agreement with UMRL dated 09 October 2006

Revised throughout - changes not indicated by CHG tags
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SECTION 12 51 00.00 99

OFFICE FURNITURE
11/06

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NOTE: This guide specification covers the requirements for interior consoles, credenza, and mapboard systems.

Brackets are used in the text to indicate designer choices or locations where text must be supplied by the designer.
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PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

Consoles, credenza, and mapboard systems must be supplied by specialty manufacturers in business specifically to serve the industrial/utility control room environment and must have at least 150 similar systems in service throughout North America.

1.2 SUBMITTALS

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NOTE: Review submittal description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list to reflect only the submittals required for the project. Keep submittals to the minimum required for adequate quality control. Include a columnar list of appropriate products and tests beneath each submittal description.

A "G" following a submittal item indicates that the submittal requires Government approval. Some submittals are already marked with a "G". Only delete an existing "G" if the submittal item is not complex and can be reviewed through the Contractor's Quality Control system. Only add a "G" if the submittal is sufficiently important or complex in context of the project.

For submittals requiring Government approval on Army projects, a code of up to three characters within the submittal tags may be used following the "G" designation to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy, Air Force, and NASA projects.

Submittal items not designated with a "G" are considered as being for information only for Army projects and for Contractor Quality Control approval for Navy, Air Force, and NASA projects.

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Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES in sufficient detail to show full compliance with the specification:

SD-01 Preconstruction Submittals

Submit Materials, Equipment, and Fixture Lists for consoles and mapboard systems including manufacturer's style or catalog numbers, where applicable, specification and drawing reference numbers, warranty information, and fabrication site information.

In addition, supply customer references (minimum of ten, including contact information) where similar equipment has been installed during the last five years, along with customer contact information.

SD-02 Shop Drawings

Detailed Drawings of Consoles and credenza, including ergonomic design parameters and dimensions, and mapboard system construction.

SD-03 Product Data

Submit Manufacturer's Catalog Data for the following items:

Consoles: Material description for all major material components of consoles. Recommended spare parts data (both startup and operational).

Credenza: Material description for all major material components of consoles. Recommended spare parts data (both startup and operational).

Mapboard Systems including the following:

a. Proposed framing material description
b. Dynamic mapboard lights
c. Dynamic mapboard digital displays for power quantities
d. Power and signal requirements for above dynamic indications
e. Scalability Requirements Explanation

f. Temporary Mapboard Marking Requirement Explanation
g. Future Dynamic Mapboard Conversion Explanation
h. Mapboard Maintenance Proposal

SD-04 Samples

Submit Manufacturer's Color Charts, Color and Finish Samples as in this section. As a minimum, submit the following samples prior to placement of final order:

Consoles including the following:

a. Framing material
b. Panel/surface material
c. Laminate materials
d. Fabric materials, if any
e. Fasteners, typical
f. Hardware (drawer handles, etc.)

Credenza including the following:

a. Framing material
b. Panel/surface material
c. Laminate materials
d. Fabric materials, if any
e. Fasteners, typical
f. Hardware (drawer handles, etc.)

Submit Mapboard Systems: prior to placement of mapboard order.

a. Framing material
b. Sample tile(s) depicting actual mapboard image at actual mapboard scale and level of detail
c. Dynamic status lights (RED/GREEN)
d. Dynamic digital power quantity display (typical)

SD-07 Certificates

Submit Certificates for Consoles, Credenza, and Mapboards certifying that loading requirements specified in this section have been tested and met.

SD-08 Manufacturer's Instructions

Submit Manufacturer's Instructions for the Consoles, Credenza and Mapboard Systems showing necessary installation instructions. Special notes must detail sequences of assembly that are mandatory, hazards, and safety precautions in assembly or in operational use.

SD-10 Operation and Maintenance Data

Submit Operation and Maintenance Manuals, including recommended spare parts, for the following equipment:

Consoles
Credenza
Mapboard Systems

1.3 QUALIFICATIONS FOR MANUFACTURERS

Material and equipment to be provided under this specification must be a standard catalog product, or custom modification thereof, of a manufacturer regularly engaged in the manufacture of consoles or mapboard systems, as appropriate. Equipment must be of the latest design and must meet all requirements as defined by the drawings and this specification. Manufacturer must have been in specialty business supplying consoles or mapboard systems, as appropriate, especially designed and installed in control room applications for at least two years.

1.4 DELIVERY, HANDLING, AND STORAGE

Deliver, store, handle and install subassemblies of system console furniture and mapboard systems in a manner that does not damage the equipment. Store equipment indoors in the original unbroken protective covering and shipping container, in a clear, dry, and ventilated location.

PART 2 PRODUCTS

2.1 CONSOLES

2.1.1 General

"System furniture", i.e. mass-produced, commercially available workstations, is not acceptable product to meet intent of this specification. Consoles must be constructed as robust, stand-alone consoles to meet the specific spatial and functional requirements as depicted on the drawings. They must be a single-tier design for use in round-the-clock, industrial/utility control room applications. Incorporate ergonomic factors such as operator fatigue, discomfort, distraction, and repetitive stress syndrome into console design.

Prior to commencement of any work, subcontractor must submit all pertinent data relating to Materials, Equipment, and Fixture Lists to be incorporated into the work; including, but not limited to:

Manufacturer's Catalog Data including:
Manufacturer's Instructions for installation and operation
Consoles
Credenza
Mapboard Systems
Detailed Drawings of Consoles and credenza

Samples including detailed information relating to:
Manufacturer's Color Charts, Color and Finish Samples
Consoles
Credenza
Mapboard Systems

2.1.2 Structural and Finishes

Structural materials must be aluminum or steel framing such that the finished console must be capable of supporting a 300 pound per square foot load on the work surface. Wood structural framing, fasteners, or wooden pins for fastening various members are not acceptable. Console dimensions must be as shown on the drawings. All components must be pre-drilled with pre-tapped holes to permit easy field assembly. Equipment and accessory mounts must be designed for easy repositioning from bay to bay.

Panels must be constructed of durable wood core with a surface high-pressure plastic laminate or metal. All fastening hardware and console framing must be concealed after final assembly. Fastening hardware must be adjustable to allow console to be field assembled to have proper alignment, uniform gaps and spacing between members, straight lines and surfaces.

Structural steel framing must be finished with an electrostatic powder coated finish. Aluminum framing may be left unfinished if not exposed. Surface finishes must be fabric or high-pressure plastic laminate (Government-specified type/design) with wood trim as shown on the drawings.

2.1.3 Equipment Enclosure and Protection

Consoles must be designed to enclose all computer and electronic equipment, including wiring, in a solid integrated, but well ventilated, housing. Consoles must protect equipment from dust, accidental kicks, knocks, and normal control room accidental collisions. Front, rear, and upper lids must be removable or hinged to permit easy operator access to the console interior for equipment adjustments, connections, or removal.

Computer monitors must also be enclosed with glare-resistant, tempered glass side-hinged bezels designed to reduce operator fatigue while permitting operator access, as needed, to monitor controls.

2.1.4 Console Features

Each operator console must be provided with the following features:

a. Custom nosing with headset-jack openings and pencil drawer storage.

b. Pull-out keyboard trays mounted under the work surface so as to minimize interference with the operator in either the extended or retraced position. Keyboard must be sufficiently wide to permit placement of a nominal mouse pad to facilitate mouse operations. Tray must be adjustable in height and tilt to permit ergonomically correct hand positions for operator when seated.

c. Task lighting with individual dimming controls for each operator. Light source must be either fluorescent or halogen, integrated into the console such that the light is shielded from the operator's eyes.

d. Rear pull-out storage drawer(s) in each console.

e. Integral standard 19" rack-mounting for equipment in specific bays as shown on drawings.

f. Forced ventilation fans, as required, to provide adequate cooling to electronic equipment.

g. Key locks must be provided on all cabinets and file drawers, group keyed for each operator console (i.e. one key per operator console).

h. All drawers must have heavy-duty, ball bearing glides.

2.1.5 Console Electrical Wiring

All electrical, radio, intercom, computer network, and telephone wiring must be capable of being completely contained within each console. Wiring entrances to console must be bottom access, entering console from below via raised computer floor. Power wiring for consoles must be from a source supplied by an uninterruptible power supply (UPS) system. Consoles must have integral raceways for power wiring to duplex and/or quadriplex 115 volt, 15 ampere receptacles throughout the console, adequate in number to support all integral electronic equipment, as well as exterior receptacles in which to connect external equipment.

2.1.6 Final Assembly and Shipment

Prior to shipment, each console must be fully assembled at the factory to ensure all parts fit properly and are fully operational. This final assembly may be witnessed by the Subcontractor's representative at no additional cost. Each console must then be disassembled, wrapped, and packaged in non-returnable wooden shipping crates sized appropriately for each component piece. Copies of assembly instructions must be shipped with each console and also separately with other submittals.

2.2 CREDENZA

2.2.1 General

"System furniture", i.e. mass-produced, commercially available computer workstations, are not acceptable product to meet intent of this specification. Credenza must be constructed as robust, stand-alone storage table to meet the specific spatial and functional requirements as depicted on the drawings.

2.2.2 Structural and Finishes

Structural materials must be aluminum or steel framing such that the finished credenza is capable of supporting a 300 pound per square foot load on the work surface. Wood structural framing, fasteners, or wooden pins for fastening various members are not acceptable. Dimensions must be as shown on the drawings. All components must be pre-drilled with pre-tapped holes to permit easy field assembly. Equipment and accessory mounts must be designed for easy repositioning.

Panels must be constructed of durable wood core with a surface high-pressure plastic laminate or metal. All fastening hardware and framing must be concealed after final assembly. Fastening hardware must be adjustable to allow credenza to be field assembled to have proper alignment, uniform gaps and spacing between members, straight lines and surfaces.

Structural steel framing must be finished with an electrostatic powder coated finish. Aluminum framing may be left unfinished if not exposed. Surface finishes must be fabric or high-pressure plastic laminate (Government-specified type/design) with wood trim as shown on the drawings.

2.2.3 Credenza Features

Each operator credenza must be provided with the following features:

a. Custom nosing.

b. Rotating two tier "Lazy Susan" shelving at both ends of credenza. These shelves must be constructed to store 3-ring binders style manuals and must have vertical fins at 4 equal locations. These must slope back-up to the center rotating point and help keep binders from tipping over and/or falling off rotating shelf.

c. Center shelving must be adjustable the full length of both sides.

h. All shelving must have heavy-duty hardware and ball bearing glides.

2.2.4 Credenza Electrical Wiring

All electrical wiring must be capable of being completely contained within credenza. Wiring entrances to credenza must be bottom access, entering credenza from below via raised computer floor. Power wiring must be from a source supplied by an uninterruptible power supply (UPS) system. Credenzas must have integral raceways for power wiring to duplex and/or quadruple 115 volt, 15 ampere receptacles throughout, adequate in number to support exterior receptacles in which to connect external equipment.

2.2.5 Final Assembly and Shipment

Prior to shipment, each credenza must be fully assembled at the factory to ensure all parts fit properly and are fully operational. This final assembly must be witnessed by the Subcontractor's representative at no additional cost. Credenza must then be disassembled, wrapped, and packaged in non-returnable wooden shipping crates sized appropriately for each component piece. Copies of assembly instructions must be shipped with credenza and also separately with other submittals.

2.3 MAPBOARD

2.3.1 General

The mapboard must be designed by a mapboard vendor who is in the business of supplying industrial/utility control room mapboards with at least 150 prior installations. Mapboard must be of either a plastic mosaic tile structure or a magnetic metal graphic tile. Steel pegboard type mapboard design is not acceptable. Mapboard must initially be of a "static" design with provisions for future "dynamic" design features, controlled by [SCADA], to be field installed.

Subcontractor must propose mapboard display system and vendor. Government reserves the right to approve or disapprove final selection of mapboard vendor based on aggregate total cost estimated for 10 years of operation and maintenance, including Government labor, ease of making temporary and permanent changes, readability from operator consoles, and ease of converting from static to dynamic mapboard while remaining operational.

2.3.2 Structural Framing and Future Video Display Panels

The structural framing of the mapboard must be designed as a smooth curved or a segmented wall to be constructed in accordance with dimensions specified on the drawings (approximate dimensions are 42 feet wide by 12 feet high). Mapboard footprint must be no larger than that shown on the drawings. Mapboard vendor's shop drawing submittals must depict how to meet specific footprint requirements.

Framing must be sized and braced adequately to support lateral forces of a concentrated 300-pound load without damage. Cutout framing for future imbedded video display panels must be provided with exact framing dimensions to be supplied during submittal process. Approximate dimensions for imbedded video must be adequate to install a 2 x 2 matrix of 40 inch (diagonal measurement) video display panels on each end of the mapboard, as shown on the drawings.

2.3.3 Mapboard Display - Specific Requirements

The mapboard must depict a single-line diagrammatic representation (to an approximate geographic orientation and scale) of the [Cape Canaveral Air Force Station (CCAFS)] power transmission and distribution system. An electronic file (AutoCad or Microstation formatted) representation must be supplied by the Subcontractor to facilitate manufacture of the mapboard display. Electronic file must be provided to Contracting Officer and Project Architect for proper documentation and archiving. Mapboard must meet the following requirements:

2.3.3.1 Mapboard Image

Actual mapboard image must look exactly as the image on the electronic file when brought up to the mapboard scale. Image must include a geographic outline of the [CCAFS] island boundary and surrounding waters.

2.3.3.2 Scalability

Since it is mandatory that the entire [CCAFS] power system be capable of being represented on this mapboard, scaling portions or all of the entire mapboard is required. Mapboard vendor must, as a submittal, provide written explanation and diagrams as to how this requirement is met.

2.3.3.3 Temporary Mapboard Operating Notations

Mapboard must be capable of being marked or tagged to indicate temporary operating conditions or permanent changes not yet incorporated into mapboard revision. As a minimum, circuit breakers and switches must be capable of being annotated as closed or open (RED=CLOSED; GREEN=OPEN). Mapboard vendor must provide, as a submittal, written explanation as to how this requirement is met (e.g. magnetic markers or pens, erasable marker pens, tape, etc.)

2.3.3.4 Mapboard Updating Performance Requirement

Mapboard display must be easily updated to reflect additions, demolitions, and reconfigurations of the mapboard image. These permanent changes must be capable of being field installed by Government's personnel with labor not to exceed 0.25 man-hours per square foot of surface area changed or affected by the change.

2.3.3.5 Future Dynamic Display Capabilities

Mapboard must be capable of adding field-installed dynamic electronic indicators (driven by Government's [SCADA] system) to provide breaker/switch status (RED=CLOSED; GREEN=OPEN), as well as digital indicators of various power quantities (watts, VARS, voltage, amps, etc.). Mapboard vendor must, as a submittal, describe how mapboard is transitioned from a "static" to "dynamic" mapboard while remaining operational, including required field installation instructions and suggested parts and

wiring required for field installation.

2.3.3.6 Mapboard Maintenance Agreement

Mapboard vendor must, as a submittal, explain how permanent changes are accomplished including what resources are required to implement the change. If revised tiles, or groups of tiles, are required from the mapboard vendor to meet this performance requirement, then a proposal must be submitted from the mapboard vendor describing a proposed "indefinite quantity, indefinite delivery" (IDIQ) contractual arrangement that defines cost per change plus cost per tile (or other proposed cost unit), along with quantity discounts and any annual fixed costs. Such proposal must also describe proposed schedule delivery for revised tiles and any other requirements that must be met by the Subcontractor.

PART 3 EXECUTION

3.1 INSPECTION AND SITE ASSEMBLY PREPARATION

Prior to uncrating, inspect shipping crates for damage. Crating damage reported to shipper and manufacturer prior to uncrating. After uncrating, report any damaged components to the manufacturer prior to assembly. Replace components damaged or broken during shipment at no additional cost to the Government.

3.2 MANUFACTURER'S FIELD ASSEMBLY REPRESENTATIVE

During actual console and mapboard assembly, as a minimum, Subcontractor must arrange for the services of a manufacturer's representative to supervise field assembly of consoles and mapboard systems. Subcontractor must supply appropriate labor to assemble each console, working under the supervision of the manufacturer's representative.

3.3 FIELD ASSEMBLY

Strict adherence to manufacturer's assembly instructions is mandatory to ensure correct assembly sequence and to avoid misalignment or damaging stresses to various components due to improper weight distribution. Any deviations from written assembly instructions must be approved by the manufacturer's representative and the Government's representative prior to continuation of work. Electrical power wiring must be connected to facility wiring system by a qualified journeyman electrician. Computer network, communication, and radio wiring must be connected by the Government's representative.

Replace any components damaged or broken during assembly at no additional cost to the Government. If the lack of any replacement component affects Subcontractor's critical milestone schedules, expedite replacement component, including shipment via airfreight, if needed.

3.4 FINAL INSPECTION

Prior to final inspection, subcontractor must submit the following:

Operation and Maintenance Data

Submit Operation and Maintenance Manuals, including recommended spare parts, for the following equipment:
Consoles

Credenza
Mapboard Systems

certifying that loading requirements comply.

After final assembly, manufacturer's representative must conduct a final inspection and demonstration of console features for the Government's representative(s). Disposition punch list items of a major nature with a corrective action plan, including schedule, with concurrence of the Subcontractor, Government's representative, and manufacturer's representative.

-- End of Section --